AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims:

Claims 1-22. (Cancelled)

23. (Amended) A CXC chemokine receptor 4 (CXCR4) agonist peptide comprising:

a) a N-terminal sequence homologous to ~~an~~ amino acids 1-14 of native stromal cell derived factor-1 (SDF-1) ~~N-terminal sequence~~, the N-terminal sequence having the formula

K[P or D]VS[L or D]SYR[C or A or F or H or W or Y]P[C or F or W or Y or H or A]RFF

b) a C-terminal sequence homologous to ~~an~~ amino acids 55-67 of native SDF-1 ~~C-terminal sequence or to a MIP-1alpha sequence~~, the C-terminal sequence having an internal cyclic amide bridge formed between a carboxylic acid side chain on a first amino acid residue and an amine side chain on a second amino acid residue, the C-terminal sequence having the following formula wherein the residues that may form the internal cyclic amide bridge are identified by an *,

L[K or O]*WIQ[E or D]*YLE[K or O]*ALN

and,

c) a ~~peptide~~ spacer sequence linking the N-terminal sequence to the C-terminal sequence, wherein the ~~peptide~~ spacer sequence ~~linking the N-terminal sequence to the C-terminal comprises naturally-occurring amino acids, non-naturally-occurring amino acids, or both naturally-occurring amino acids and non-naturally-occurring amino acids~~ is of the formula G_{1-4} or $(CH_2)_{1-4}$.

Claims 24-26 (Cancelled)

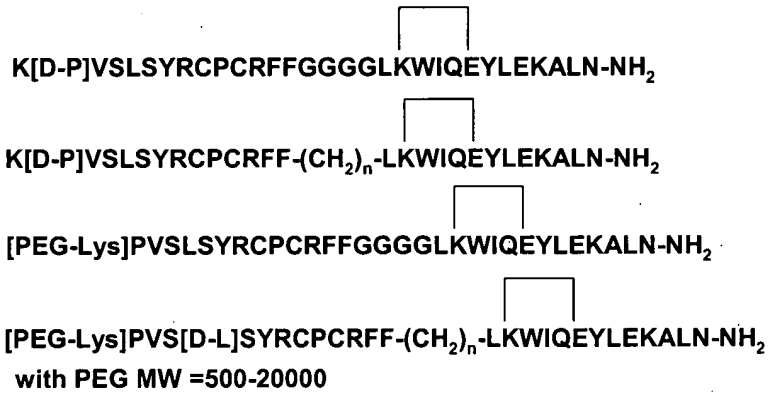
27. (Amended) The CXCR4 agonist of ~~any one of claims~~ claim 23 ~~to 26~~ where the C-

termini is an acid or an amide.

28. (Amended) The CXCR4 agonist peptide of any one of claims 23 to 27 wherein the peptide is selected from the group consisting of polypeptides having sequence of SEQ ID NO: ~~12 to 27~~ 20 to 25.

29. (Amended) The CXCR4 agonist of claim 28 wherein the peptide is SEQ ID NO: ~~13~~ 22 (CTCE0022) or 23 (CTCE0021).

30. (New) The CXCR4 agonist of claim 23, wherein the agonist is selected from the group consisting of the following, wherein n=1-4 and PEG is a polyethylene glycol moiety:



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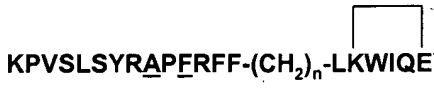


KPVSLSYRAPFRFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

[PEG-Lys]PVSLSYRAPFRFFGGGGLKWIQEYLEKALN-NH_2

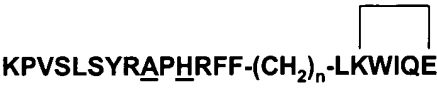
[PEG-Lys]PVSLSYRAPFRFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

with PEG MW =500-20000

K[D-P]VS[D-L]SYRCPCRFFGGGGLKWIQEYLEKALN-NH_2

K[D-P]VS[D-L]SYRCPCRFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

KPVSLSYRAPHRFFGGGGLKWIQEYLEKALN-NH_2



KPVSLSYRAPHRFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

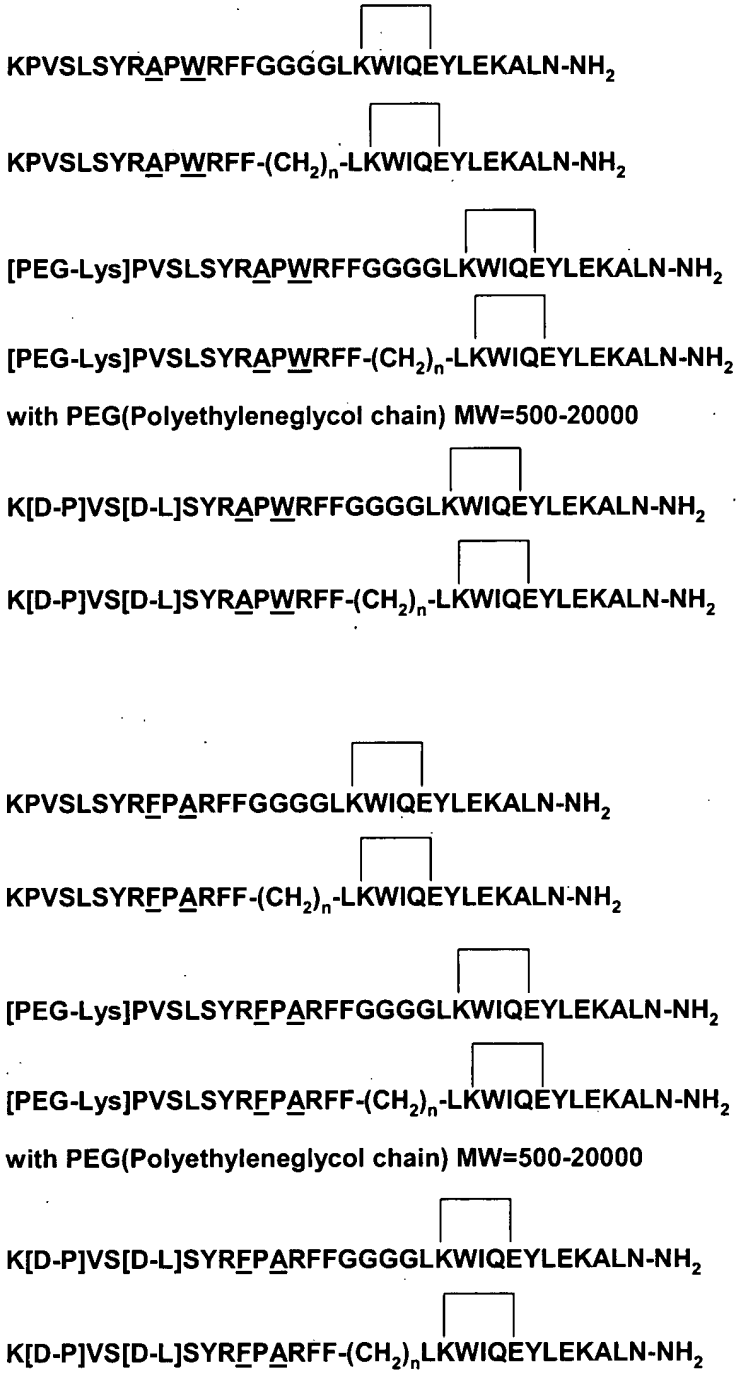
[PEG-Lys]PVSLSYRAPHRFFGGGGLKWIQEYLEKALN-NH_2

[PEG-Lys]PVSLSYRAPHRFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

with PEG(Polyethyleneglycol chain) MW=500-20000

K[D-P]VS[D-L]SYRAPHRFFGGGGLKWIQEYLEKALN-NH_2

K[D-P]VS[D-L]SYRAPHRFF-$(CH_2)_n$LKWIQEYLEKALN-NH_2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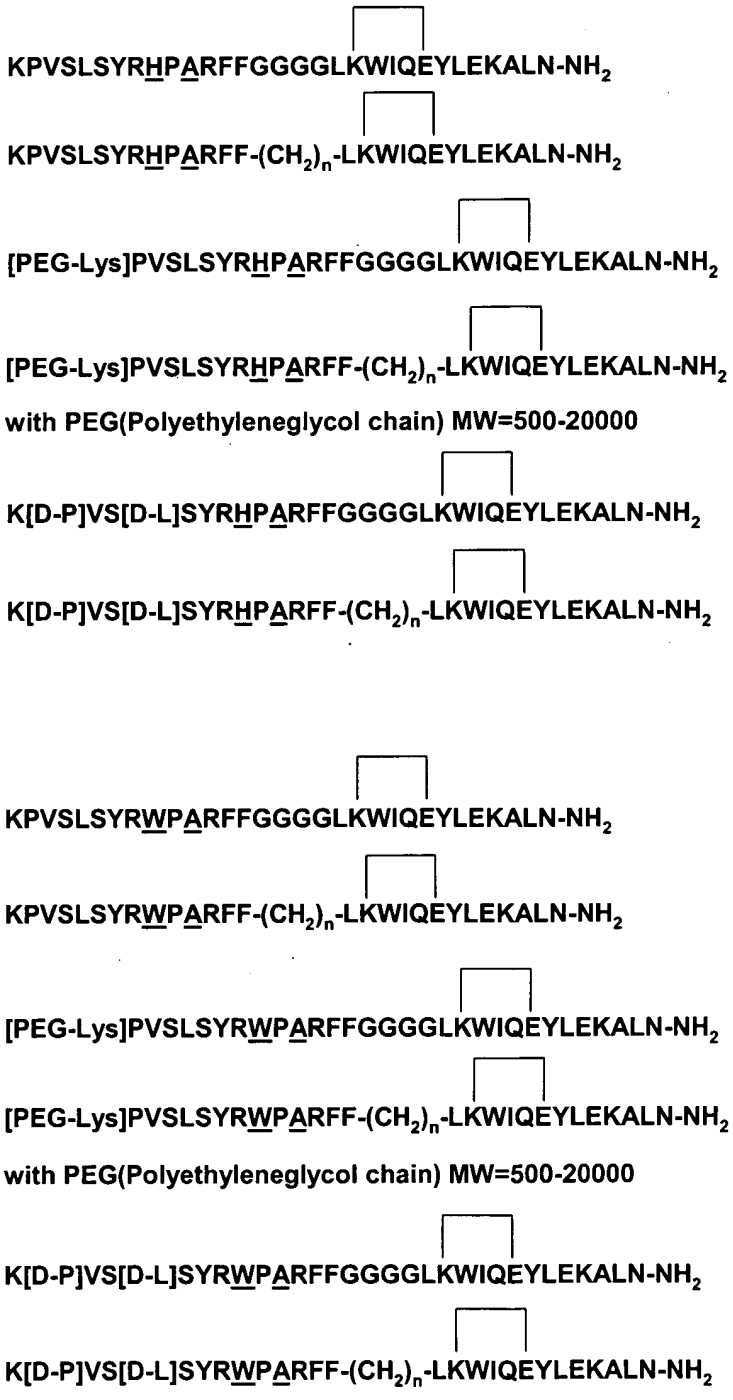
KPVSLSYRAPWRFF-(CH2)n-LKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRAPWRFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRAPWRFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRAPWRFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRAPWRFF-(CH2)n-LKWIQEYLEKALN-NH2
KPVSLSYRFPARFFGGGGLKWIQEYLEKALN-NH2
KPVSLSYRFPARFF-(CH2)n-LKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRFPARFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRFPARFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRFPARFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRFPARFF-(CH2)nLKWIQEYLEKALN-NH2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[PEG-Lys]PVSLSYRHPARFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRHPARFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRHPARFF-(CH2)n-LKWIQEYLEKALN-NH2
KPVSLSYRWPARFFGGGGLKWIQEYLEKALN-NH2
KPVSLSYRWPARFF-(CH2)n-LKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRWPARFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRWPARFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRWPARFFGGGGLKWIQEYLEKALN-NH2
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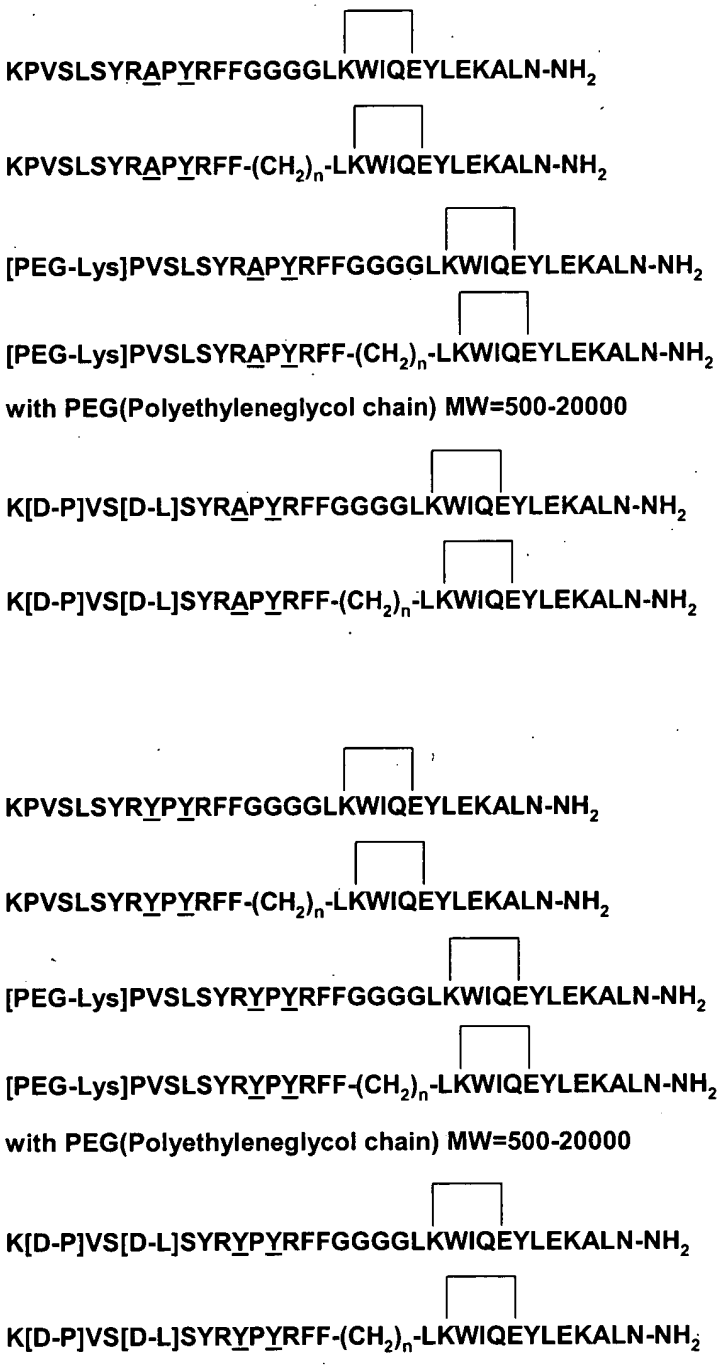
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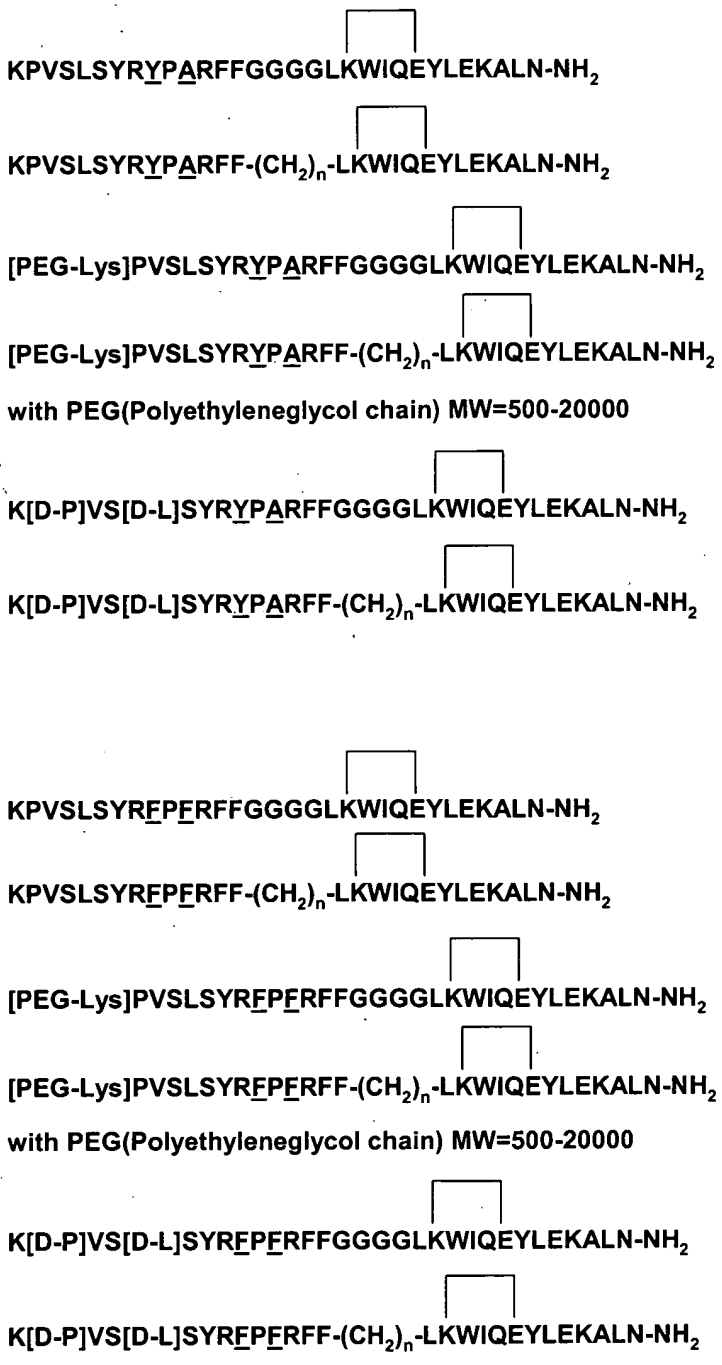
[PEG-Lys]PVSLSYRAPYRFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRAPYRFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRAPYRFF-(CH2)n-LKWIQEYLEKALN-NH2
KPVSLSYRYPYRFFGGGGLKWIQEYLEKALN-NH2
KPVSLSYRYPYRFF-(CH2)n-LKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRYPYRFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRYPYRFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRYPYRFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRYPYRFF-(CH2)n-LKWIQEYLEKALN-NH2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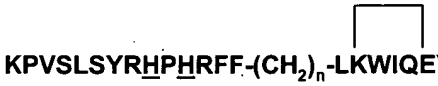
KPVSLSYRYPARFF-(CH2)n-LKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRYPARFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRYPARFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRYPARFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRYPARFF-(CH2)n-LKWIQEYLEKALN-NH2
KPVSLSYRFPFRFFGGGGLKWIQEYLEKALN-NH2
KPVSLSYRFPFRFF-(CH2)n-LKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRFPFRFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRFPFRFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRFPFRFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRFPFRFF-(CH2)n-LKWIQEYLEKALN-NH2

KPVSLSYRHPHRFFGGGGLKWIQEYLEKALN-NH_2



KPVSLSYRHPHRFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

[PEG-Lys]PVSLSYRHPHRFFGGGGLKWIQEYLEKALN-NH_2

[PEG-Lys]PVSLSYRHPHRFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

with PEG(Polyethyleneglycol chain) MW=500-20000

K[D-P]VS[D-L]SYRHPHRFFGGGGLKWIQEYLEKALN-NH_2

K[D-P]VS[D-L]SYRHPHRFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

KPVSLSYRWPWRFFGGGGLKWIQEYLEKALN-NH_2

KPVSLSYRWPWRFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

[PEG-Lys]PVSLSYRWPWRFFGGGGLKWIQEYLEKALN-NH_2

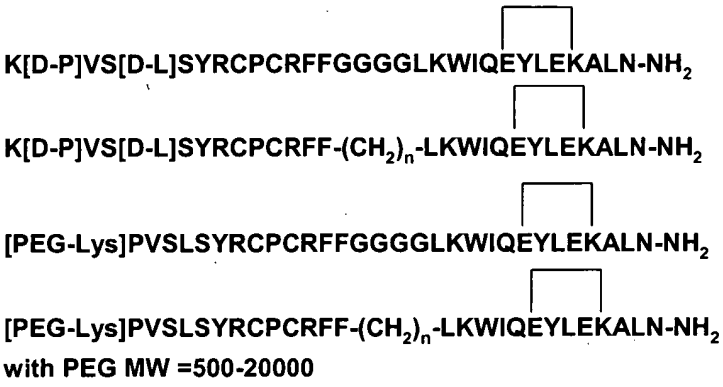
[PEG-Lys]PVSLSYRWPWRFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

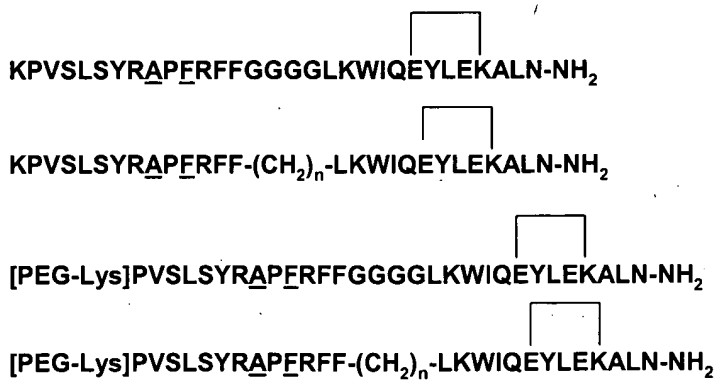
with PEG(Polyethyleneglycol chain) MW=500-20000

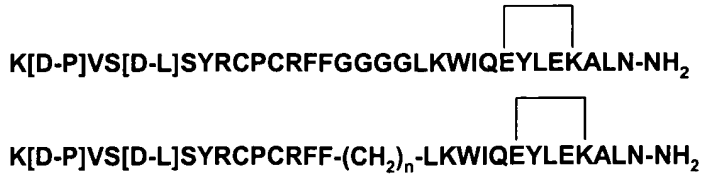
K[D-P]VS[D-L]SYRWPWRFFGGGGLKWIQEYLEKALN-NH_2

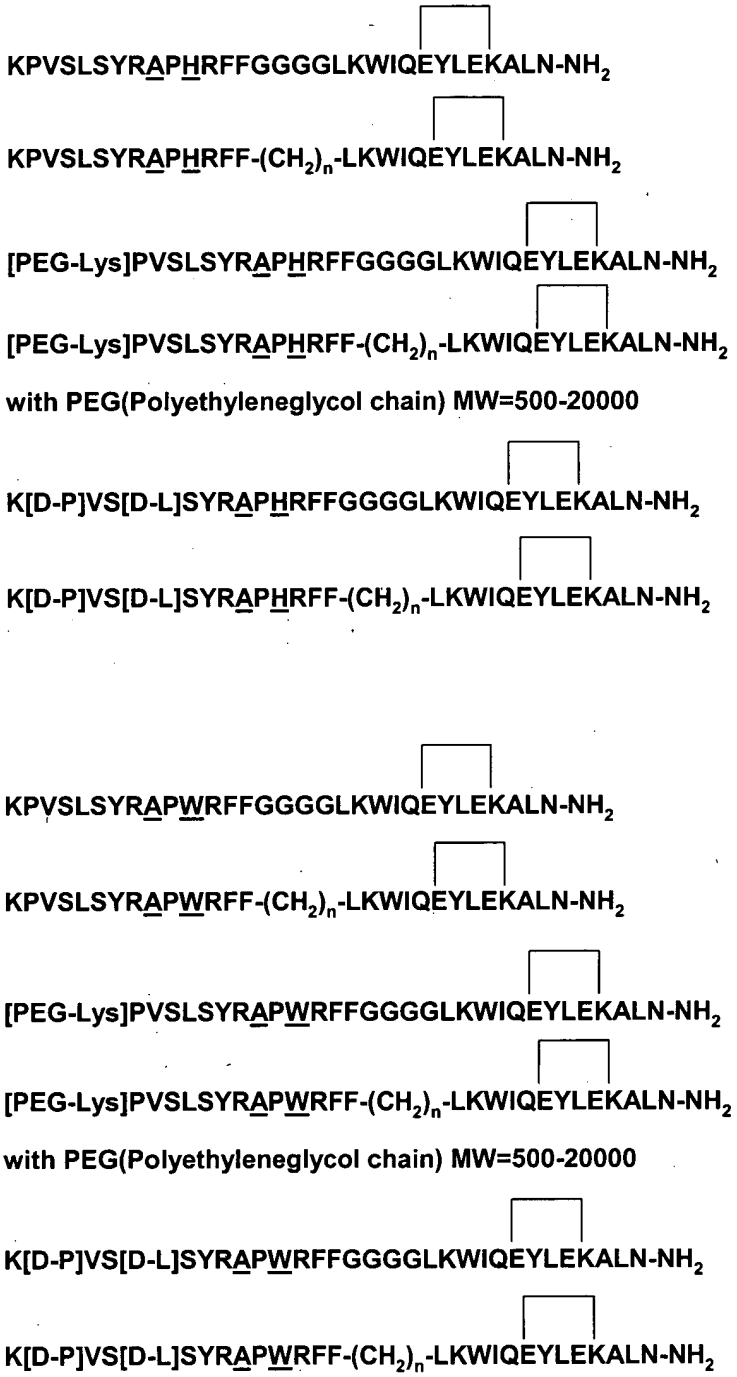
K[D-P]VS[D-L]SYRWPWRFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

31. (New) The CXCR4 agonist of claim 23, wherein the agonist is selected from the group consisting of the following, wherein n=1-4 and PEG is a polyethylene glycol moiety:





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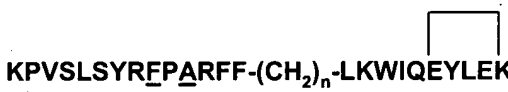
KPVSLSYRAPHRFF-(CH2)n-LKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRAPHRFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRAPHRFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRAPHRFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRAPHRFF-(CH2)n-LKWIQEYLEKALN-NH2
KPVSLSYRAPWRFFGGGGLKWIQEYLEKALN-NH2
KPVSLSYRAPWRFF-(CH2)n-LKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRAPWRFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRAPWRFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRAPWRFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRAPWRFF-(CH2)n-LKWIQEYLEKALN-NH2

KPVSLSYRFPARFFGGGGLKWIQEYLEKALN-NH_2



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[PEG-Lys]PVSLSYRFPARFFGGGGLKWIQEYLEKALN-NH_2

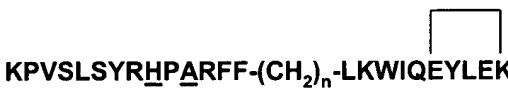
[PEG-Lys]PVSLSYRFPARFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

with PEG(Polyethyleneglycol chain) MW=500-20000

K[D-P]VS[D-L]SYRFPARFFGGGGLKWIQEYLEKALN-NH_2

K[D-P]VS[D-L]SYRFPARFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

KPVSLSYRHPARFFGGGGLKWIQEYLEKALN-NH_2



KPVSLSYRHPARFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

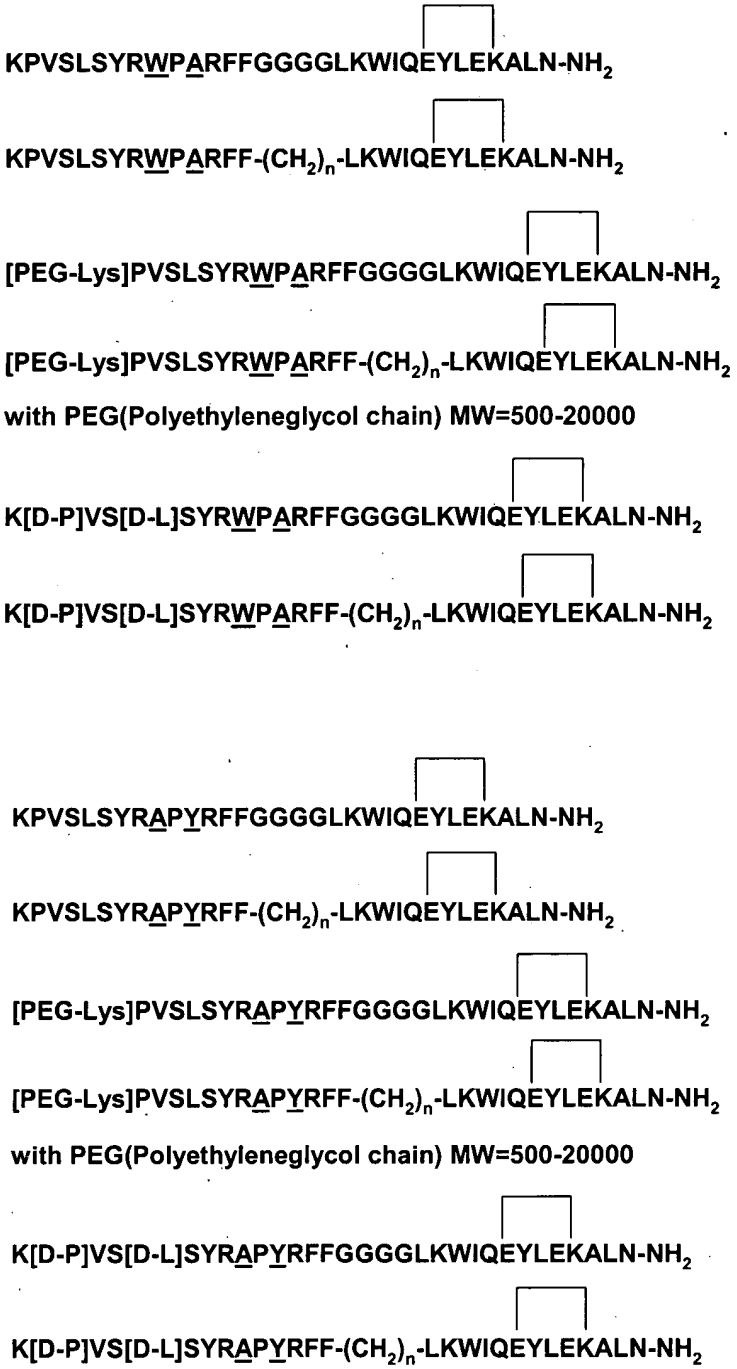
[PEG-Lys]PVSLSYRHPARFFGGGGLKWIQEYLEKALN-NH_2

[PEG-Lys]PVSLSYRHPARFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2

with PEG(Polyethyleneglycol chain) MW=500-20000

K[D-P]VS[D-L]SYRHPARFFGGGGLKWIQEYLEKALN-NH_2

K[D-P]VS[D-L]SYRHPARFF-$(CH_2)_n$-LKWIQEYLEKALN-NH_2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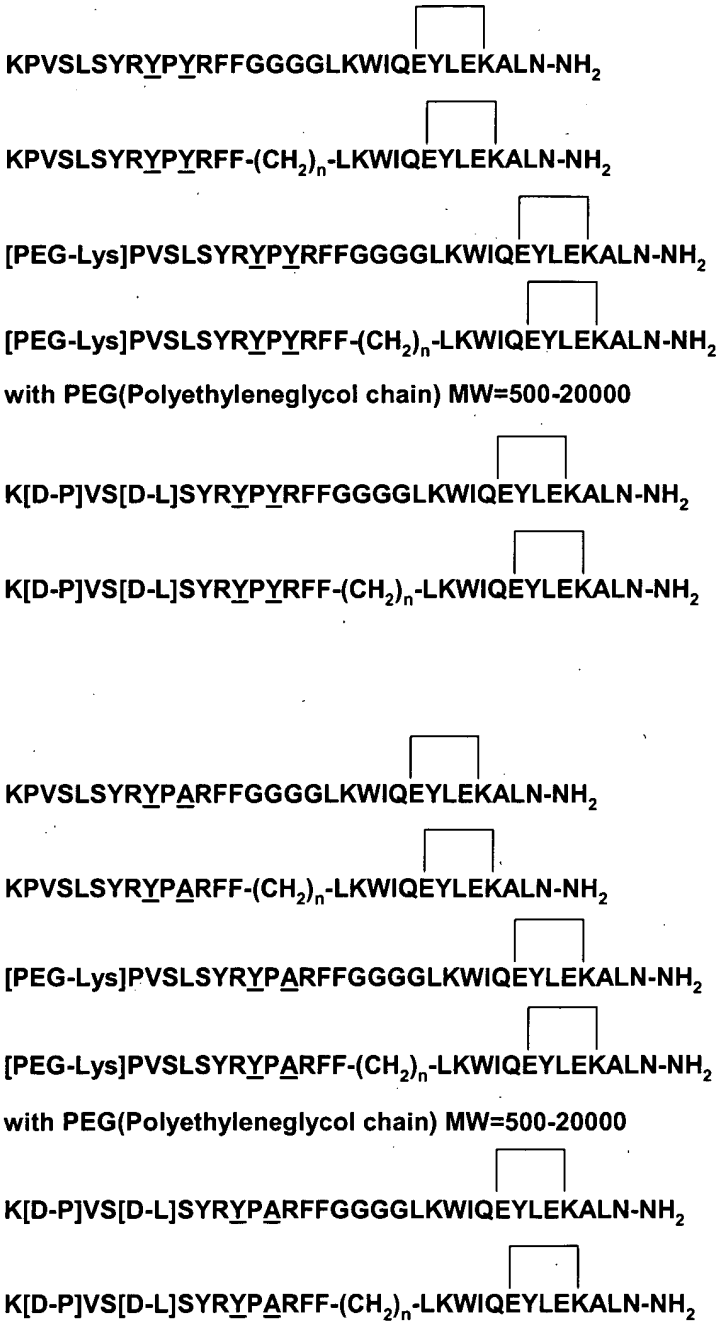
[PEG-Lys]PVSLSYRWPARFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRWPARFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRWPARFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRWPARFF-(CH2)n-LKWIQEYLEKALN-NH2
KPVSLSYRAPYRFFGGGGLKWIQEYLEKALN-NH2
KPVSLSYRAPYRFF-(CH2)n-LKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRAPYRFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRAPYRFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRAPYRFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRAPYRFF-(CH2)n-LKWIQEYLEKALN-NH2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[PEG-Lys]PVSLSYRYPYRFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRYPYRFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRYPYRFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRYPYRFF-(CH2)n-LKWIQEYLEKALN-NH2
KPVSLSYRYPARFFGGGGLKWIQEYLEKALN-NH2
KPVSLSYRYPARFF-(CH2)n-LKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRYPARFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRYPARFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRYPARFFGGGGLKWIQEYLEKALN-NH2
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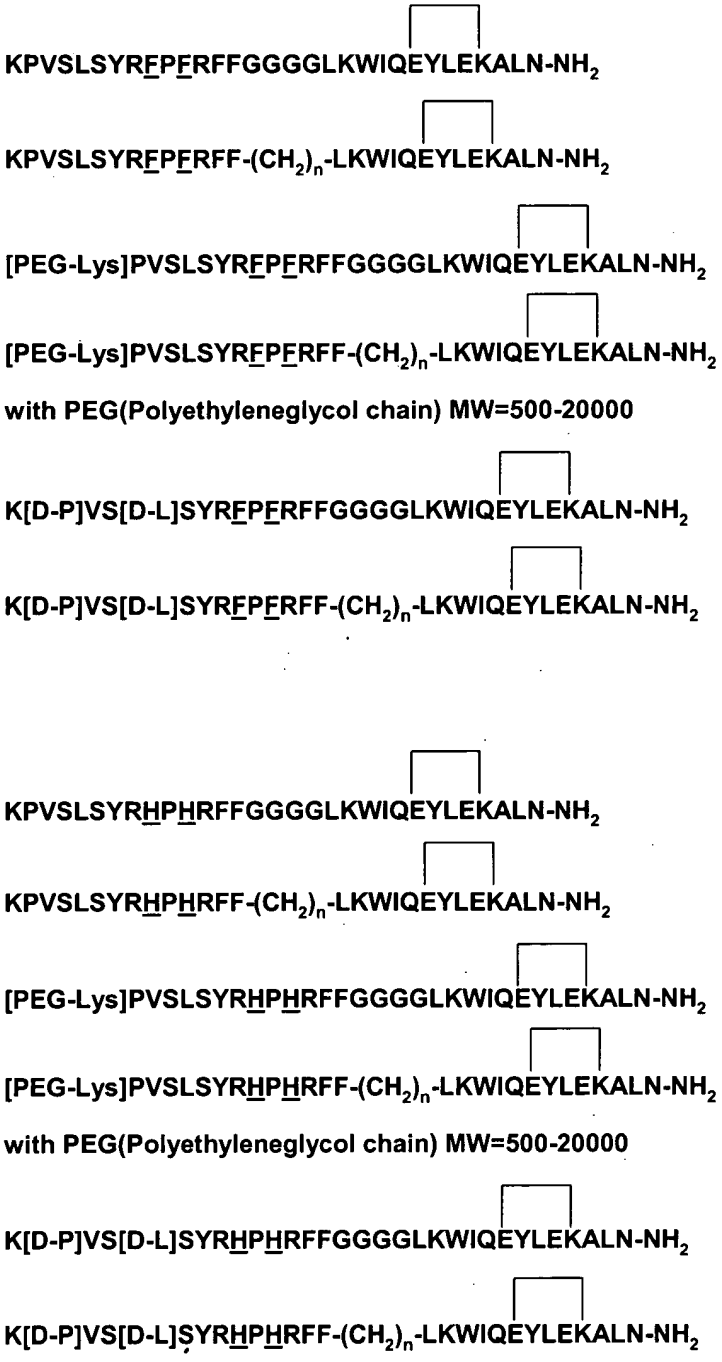
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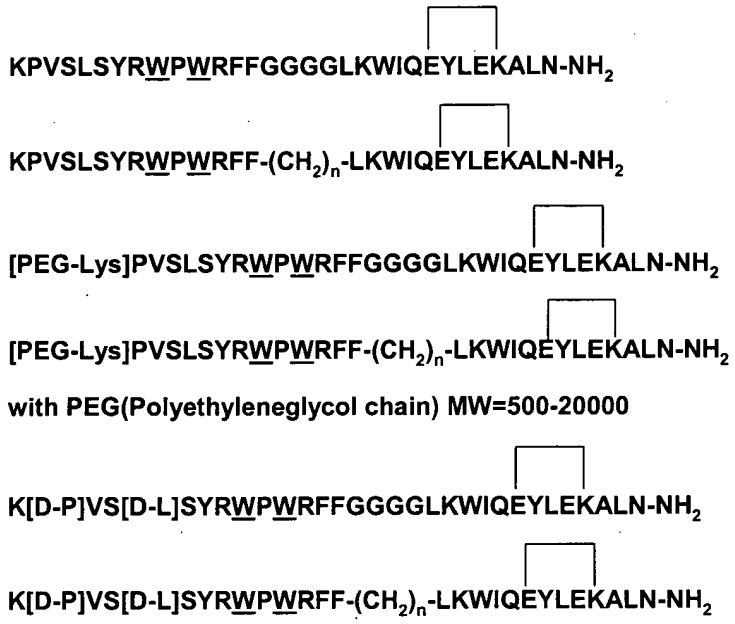
[PEG-Lys]PVSLSYRFPFRFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRFPFRFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRFPFRFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRFPFRFF-(CH2)n-LKWIQEYLEKALN-NH2
KPVSLSYRHPHRFFGGGGLKWIQEYLEKALN-NH2
KPVSLSYRHPHRFF-(CH2)n-LKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRHPHRFFGGGGLKWIQEYLEKALN-NH2
[PEG-Lys]PVSLSYRHPHRFF-(CH2)n-LKWIQEYLEKALN-NH2
with PEG(Polyethyleneglycol chain) MW=500-20000
K[D-P]VS[D-L]SYRHPHRFFGGGGLKWIQEYLEKALN-NH2
K[D-P]VS[D-L]SYRHPHRFF-(CH2)n-LKWIQEYLEKALN-NH2



32. (New) The CXCR4 agonist of claim 23, wherein the agonist is H-[Ala^{9}-Phe^{11}]-SDF-(1-14)-4Gly-cyclo(Lys^{56}-Glu^{60})-SDF-(55-67)-NH_2, having the sequence